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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,337	03/18/2005	Takeshi Obata	8029-1073	6296

466 7590 06/08/2009
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EXAMINER	
LEE, CYNTHIA K	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
06/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,337	OBATA ET AL.	
	Examiner	Art Unit	
	CYNTHIA LEE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

This Office Action is responsive to the amendment filed on 2/12/2009. Claim 2 has been canceled and claims 8-14 have been added. Claims 1 and 3-14 are pending. Applicant's arguments have been fully considered and are persuasive. Claims 1 and 3-14 are finally rejected for reasons necessitated by applicant's amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda (JP 2001-276555) in view of Haug (US 6309769).

Oda discloses a fuel cell in which the electrolyte is a polymer electrolyte [0017] (Applicant's solid electrolyte film). The fuel cell has a deoxygenation membrane module 52 prior to entering the cathode. See Drawing 4. It is noted that the membrane module is disposed between the cathode 53a and the passage 9. It is further noted that the membrane module covers the surface of the cathode electrode from the passage 9 (Applicant's claim 2).

Regarding Applicant's oxygen/nitrogen separation coefficient as claimed in claims 8 and 14, Oda discloses that the voltage generated by a fuel cell will improve by increasing the oxygen concentration [0041]. It would have been obvious to one of

ordinary skill in the art at the time the invention was made to increase the oxygen concentration of the air of Oda for the benefit of increasing the fuel cell performance. Oda clearly teaches that oxygen concentration is a result effective variable. It has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05. Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). MPEP 2144.05

Regarding claims 3,4,9 and 10, the membrane comprises alkoxide of silicon, which is a mixture of tetra alkoxysilane and trialkoxysilane (Applicant's polysiloxane-based polymer film) [0027].

Regarding the water vapor transmission coefficient as claimed in claims 6 and 12, Oda discloses that the membrane thickness is between 0.1-10 micrometers. If it is less than 0.1, the oxygen density improving becomes insufficient. If it is more than 10, the transmissivity of oxygen will fall [0031]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the thickness of the membrane depending on the desired oxygen concentration of the air of Oda. Oda clearly teaches that the pore size is a result effective variable. It has been held by the

courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05. The instant Specification pg 9, 3rd paragraph, states that "the separation membrane 330 having a film thickness within the range described above, it is desirable that its material has a water vapor transmission coefficient Pw satisfying formula (1) below" Pg 8, last paragraph states that the thickness is 0.1 um-1um. Thus, the water transmission depends on the thickness of the membrane. Thus, varying the thickness of the membrane of Oda will necessarily vary the water transmission coefficient.

Further, Oda discloses that the membrane is immersed in the sol of fluorine component content and calcinated to form a film that has water repellence of 2 um or less on the membrane to form a hygroscopic surface suppressing film. If the thickness exceeds 2 um, the transmission quantity of gas will fall. 1 um or less is desireable. Oda clearly teaches that the thickness of the fluorine sol coating is a result effective variable. It has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05.

Oda does not disclose that the fuel cell is a liquid fuel type fuel cell (Applicant's claim 1), in which methanol is the fuel (Applicant's claim 7). Oda discloses that methanol is used in the art as fuel [0005]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use methanol as fuel in the fuel cell of Oda since it has been held by the court that the selection of a known material

based on its suitability for its intended use is *prima facie* obvious. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). Se MPEP 2144.07.

Oda discloses a separation membrane, but does not disclose wherein the separation membrane covers an entire surface of the cathode (Applicant's claim 1). Oda does not disclose a passage for feeding air to the cathode electrode formed in said space between said separation membrane and said separator (Applicant's claim 8). Oda does not disclose a passage overlying the separation membrane for feeding air to the cathode electrode, so that said separation membrane is between said cathode electrode and said passage (Applicant's claim 14). Haug teaches a carbon monoxide filter layer disposed on the cathode to increase cell performance. See fig 4 and 6:15-20. The filter configuration can have a relatively compact and economical design (3:15-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose the membrane of Oda to the surface of the cathode, as taught by Haug, instead of as a module for the benefit of minimizing the size of the fuel cell system.

Response to Arguments

Applicant's arguments filed 02/12/2009 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Lee/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795